

HOUSEHOLD CONSUMERS'
ACCEPTANCE OF
EXPERIMENTAL

GRAPEFRUIT JUICE CRYSTALS

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PREFACE

This study was designed to provide information about consumer acceptance of a new foam-mat dried instant grapefruit juice. It is one of a group of studies conducted by the Special Surveys Branch, Statistical Reporting Service (SRS), U.S. Department of Agriculture (USDA), to determine consumer reactions to agricultural products. The Agricultural Research Service (ARS) and the Florida Department of Citrus (formerly the Florida Citrus Commission) cooperated with SRS in the research effort. Other services in USDA provided advice in the planning stage of the study.

The test product was developed by the Fruit and Vegetable Products Laboratory, Southern Utilization Research and Development Division, ARS. The Florida Department of Citrus obtained cooperation from the Riegel Paper Corporation, New York City, in packaging the crystals for the study.

The project was under the general supervision of Margaret Weidenhamer, Chief, Special Surveys Branch, Standards and Research Division, SRS. Market Facts, Incorporated, conducted the study under contract with USDA.

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HIGHLIGHTS

The concept of instant grapefruit juice that can be made from crystals by adding water was well received among over 400 homemakers in Metropolitan Pittsburgh, Pa., but the test product was only generally acceptable.

Before testing the product, the homemakers' reactions to the description of the crystals most often concerned assumptions that the product would be easy to store and prepare. Homemakers--both users and nonusers of grapefruit juice--were receptive to the idea of trying such a product. Almost half the homemakers expected no disadvantages and, except for taste or flavor--mentioned by about 2 in 10--no one disadvantage was anticipated by more than 1 in 10 homemakers. The majority assumed that the nutritional value and vitamin content of the grapefruit juice crystals would be just as good or better than regular grapefruit juice.

After using the test product in their homes, the homemakers most frequently mentioned the same advantages for the grapefruit juice crystals as the presumed advantages--ease of storage and ease of preparation. Some respondents indicated that the crystals were difficult to mix or did not dissolve readily, but most of the criticism was directed to the taste or flavor of the test product. However, about one-fourth of the respondents considered the taste of the test product an advantage, and about the same proportion of homemakers from grapefruit juice user households preferred the taste of the juice made from the crystals to their usual form of grapefruit juice.

Responses to a series of attitude questions about future interest in grapefruit juice crystals indicate that, in general, the test product was well received by about half the respondents. However, respondents--both users and nonusers of grapefruit juice--were more receptive to the concept of the product than to the test product. In addition, the average ratings given to the test product on a nine-point hedonic scale were not as high as the ratings given to grapefruit juice in general. Improving the flavor would probably enhance the chances of successfully marketing the crystals, and developing the product so that it would dissolve more easily might also increase its popularity.

HOUSEHOLD CONSUMERS' ACCEPTANCE OF EXPERIMENTAL GRAPEFRUIT JUICE CRYSTALS

By

Thomas M. Stack and Evelyn F. Kaitz 1/

INTRODUCTION

This report presents results of a study designed to evaluate consumer acceptance of foam-mat dried grapefruit juice crystals and to provide insights into consumers' reactions to crystals made from other citrus fruits.

The findings are based on personal interviews conducted during May and June 1967 with a sample of homemakers living in private households in Metropolitan Pittsburgh, Pa. For this study, a homemaker is defined as the person chiefly responsible for purchasing and preparing food for the household. As in all surveys in which a sample is interviewed rather than the total population, the findings are subject to sampling errors. The sample design, sampling method, and sampling tolerances are described in the Appendix.

The first interview with the homemaker was held to determine the grapefruit juice user and nonuser status of the household. In user households (those in which the homemakers said grapefruit juice had been used at least once in their homes during the 6 months preceding the interview), the homemaker's opinions and general use patterns of the various kinds of grapefruit juice were obtained. All homemakers' reactions to the concept of grapefruit juice crystals in addition to background information about the households were also obtained. The background information is provided in the Appendix. At the conclusion of the first interview, each respondent was given a supply of either sweetened or unsweetened grapefruit juice crystals. The sweetened crystals had a Brix acid ratio of 13.5, the unsweetened 9.5. The crystals were packaged in preformed yellow and green pouches in laminated paper-foil-polyethylene material. Each pouch contained enough crystals to reconstitute into slightly over a pint of juice by adding 16 ounces of water. Two pouches were inserted in a plain white cardboard box for distribution. The amount of crystals left for the test depended on the number of household members: one or two members, two cardboard boxes; three, four, or five members, three boxes; and six or more members, four boxes.

Homemakers were asked to serve the juice at least once to each household member age 12 or older. After tasting the juice the first time, each of these persons was to rate the crystals and grapefruit juice in general on a nine-point hedonic scale--"dislike extremely" to "like extremely."

1/ Mr. Stack is with Market Facts, Incorporated; Mrs. Kaitz is with the Standards and Research Division, Statistical Reporting Service.

About a week later, the interviewer returned to obtain information about the homemakers' reactions to the crystals and collect the eligible household members' rating forms. Some of the product was left again--sweetened crystals in households where unsweetened had already been tested and vice versa--plus rating forms for each eligible member of the household.

The interviewer returned once more--this time to obtain the homemakers' opinions about the second type of crystals; their preference for either the sweetened or unsweetened crystals; and reactions to the packaging and potential purchase of the crystals. The rating forms were also collected.

The initial interview was completed with 459 homemakers; however, 34 were unwilling to accept the crystals for testing, mainly because they disliked grapefruit juice or grapefruit. A total of 374 households cooperated in testing both the sweetened and unsweetened crystals, including 182 users and 192 non-users of grapefruit juice.

In many of the tabulations presented, percentages may add to more than 100 (or more than the group totals shown) because some respondents gave more than one reply. The "miscellaneous" categories of information, shown throughout the tabulations, are the merging of all the ideas or items which individually were given by no more than 2 percent of the respondents in reply to a particular question. The category "dietary reasons" includes all the responses that refer to "weight watching," "on a diet," "curbs appetite," etc.; and "medical reasons" includes all the responses that refer to "allergies," "doctor's orders," "diabetes," "health," etc.

The questionnaires and rating form used are reproduced in the Appendix.

INITIAL INTERVIEW

Use of Citrus Products

To identify grapefruit juice user and nonuser households, all homemakers were initially asked to indicate what fresh fruit and what fruit juices, from a list of specific citrus juices, had been used in their households in the 6 months preceding the interview. A user household was defined as one in which the homemaker said that grapefruit juice had been used in the 6 months preceding the interview. Among the 459 homemakers who were interviewed before placement of the grapefruit juice crystals, 210 (46 percent) qualified as respondents from user households.

About 8 in 10 respondents from grapefruit juice user households and about 6 in 10 from nonuser households indicated that fresh grapefruit had been used in the 6 months preceding the interview. During this same time period, about 9 in 10 homemakers reported that fresh oranges and orange juice had been used.

Reasons for Grapefruit and Orange Juice Forms Used

Respondents who had reported using grapefruit and orange juice in their households in the previous 6 months were asked to identify in which form(s) each juice was used. The respondents using grapefruit juice most often mentioned the canned grapefruit juice form, whereas the respondents using orange juice indicated the frozen concentrated orange juice form.

Form of grapefruit juice and orange juice used in past 6 months

Form	Grapefruit juice	Orange juice
	Percent ^{1/}	
Canned.....	85	36
Frozen concentrated.....	17	60
Chilled.....	17	33
Home prepared.....	11	16
Powdered or crystallized.....	-	3
	Number	
Respondents.....	210	422

^{1/} Percentages add to more than 100 because some respondents gave more than one reply.

- Zero in this sample.

Homemakers who indicated using only one form were assumed to use this form most, and homemakers who reported using more than one form of grapefruit or orange juice were asked which one form was used most. The homemakers were then asked why they generally used that particular form of juice. Ease of preparation or serving was mentioned most frequently for canned grapefruit juice. Because comparatively few respondents selected frozen concentrated, chilled, or home prepared grapefruit juice, their reasons for use of these forms are not included in the Appendix table. However, the specific reason given most often for using these forms was the natural, fresh taste. (Question 3c, Placement) The most frequent reasons reported for using canned, frozen concentrated, or chilled orange juice were the same as those given for the same form of grapefruit juice. (Question 3d, Placement)

Respondents from households that had not used grapefruit juice in the 6 months preceding the interview (nonusers) were asked why it had not been used. Dislike of the taste or flavor and a preference for fresh fruit were the most frequently mentioned reasons for nonuse of grapefruit juice.

Frequency of and Reasons for Grapefruit Juice Use

Better than 6 in 10 respondents from user households said they had used grapefruit juice at least once a week, on the average, during the previous year and more than 2 in 10 had used it almost every day.

<u>User households</u>	
<u>Frequency of use</u>	<u>---- Percent---</u>
Less than once a month	7
About once a month	17
Every 2 or 3 weeks	11
About once a week	20
Several times a week	22
Almost every day	23
=====	
	<u>---- Number---</u>
Respondents	210

Among respondents from user households, about 4 in 10 reported that grapefruit juice was used because of its taste or flavor and about 3 in 10 mentioned dietary reasons and nutritional value. In general, there were practically no differences in reasons for use regardless of socioeconomic characteristics. However, among the respondents who said grapefruit juice was used once a week or more, dietary reasons received more mentions than among those who indicated using grapefruit juice less than once a week. Serving a variety of juices appeared to be important to proportionately more of those who used grapefruit juice infrequently. (Summary of questions 6a and 6b, Placement)

Homemakers who reported using grapefruit juice in their households less than once a week (35 percent of total users) were asked why it was not used more frequently. The largest proportion of these respondents (44 percent) said they preferred other juices. Other reasons included dislike of the bitter, tangy, sour taste; only one person in the family drinks it; and prefer fresh grapefruit. Except for preference for other juices, no other reason was mentioned by more than 15 percent of these less frequent users.

In user households, consumption of grapefruit juice was reported for household members in all age groups. However, it was used more often by adults age 35 and over.

Respondents were then asked when grapefruit juice was generally used by specified user age groups in their households. Use for breakfast, by far the most popular time for all age groups, was reported by about 8 in 10 homemakers. Use for snacks between and after meals was mentioned much less often, but was more popular than use for lunch or dinner.

Use of Sweetened or Unsweetened Grapefruit Juice

In the user households, very few homemakers reported using only sweetened grapefruit juice. The majority (68 percent) said only unsweetened was used, and about 2 in 10 (18 percent) alternated between the two. The most frequently mentioned reasons for using both the sweetened and unsweetened grapefruit juice were "like to change around," and "some household members prefer sweetened and some prefer unsweetened."

Advantages and Disadvantages of Canned Grapefruit Juice

All respondents from user households were asked about advantages and disadvantages of canned grapefruit juice. Preparation and serving advantages, such as it is convenient, easy to prepare, and ready to drink, were mentioned by 6 in 10 homemakers. The next most important advantage cited by about 4 in 10 (39 percent) was the package or container because, for example, it was easy to store and retains freshness. However, taste or flavor and comparative low cost of this form were mentioned by only about 1 in 10. (Question 9a, Placement)

In discussing the disadvantages of canned grapefruit juice, more than 5 in 10 homemakers (55 percent) from user households said there were no disadvantages. The only disadvantages cited by as many as 1 in 10 were a tinny, metallic, canned taste, and the amount of storage space needed. (Question 9b, Placement)

Advantages and Disadvantages of Frozen Concentrated Grapefruit Juice

As mentioned previously, taste or flavor was given as an advantage for the canned form by about 1 in 10 from user households, but almost 4 in 10 (37 percent) cited taste or flavor as an advantage for the frozen concentrated grapefruit juice. Most of those who mentioned the taste or flavor referred to the natural, fresh taste. The package or container was also cited as an advantage, mainly because it was easy to store, by approximately the same number of respondents (35 percent). (Question 10a, Placement)

Three in 10 respondents reported there were no disadvantages of frozen concentrated grapefruit juice, but 4 in 10 mentioned preparation and serving disadvantages; for example, the frozen concentrate had to thaw out first and be mixed with water. (Question 10b, Placement)

Advantages and Disadvantages of Powdered Fruit Drinks

Since the main objective of this study was to obtain homemakers' reactions to a crystallized form of citrus juice, we were interested in the use of and reactions to powdered or crystallized fruit drinks in the sample households. All respondents were first asked to identify the fruit drinks, punches, ades, or mixes that had been used in their households in the 6 months preceding the

interview. Lemonade and orange flavor drinks were used by the largest proportion of respondents (about 4 in 10) in the prior 6 months. Use of powdered or crystallized forms of fruit drinks--both citrus and noncitrus flavors--was reported by about half the respondents.

All respondents who had mentioned using any of the juices or drinks in powdered or crystallized form within the preceding year were asked to indicate any advantages and disadvantages they thought this form had over other forms of fruit drinks and juices. The advantages mentioned most frequently concerned the speed and ease of preparation and the ease of storage. More than 3 in 10 of the grapefruit juice nonusers (32 percent) and better than 1 in 10 (15 percent) of the grapefruit juice users also said that powder or crystal forms cost less. (Question 5d, Placement)

Almost half the respondents who had used powdered or crystallized drinks said there were no disadvantages. The main objection mentioned by almost 3 in 10 homemakers who had used this form concerned the taste or flavor. However, approximately the same proportion of respondents made favorable comments about the taste or flavor. (Question 5e, Placement)

Reaction to Description of Grapefruit Juice Crystals

Prior to informing respondents from both user and nonuser households that they would be asked to try the new grapefruit juice crystals, they were given the following description of the test product: "Grapefruit juice crystals are made from real grapefruit. They are made by a new process which dries the grapefruit and leaves it in a crystallized form. These crystals are like powder and can be turned into grapefruit juice just by adding water." The interviewer read this statement to the respondent and allowed enough time for the respondent to read the description. Homemakers were then asked how likely they would be to try the described product. More than 7 in 10 respondents (76 percent) from user households said they probably or definitely would be interested in trying it. As shown below, even among the respondents from nonuser households, more than half (53 percent) said they probably or definitely would be interested in trying the grapefruit juice crystals.

	User households	Nonuser households
<u>Interest in trying grapefruit juice crystals</u>	-----	-----
	Percent	Percent
Definitely try	38	15
Probably try	38	38
Might or might not try	14	17
Probably not try	8	16
Definitely not try	2	13
Not specified	-	1
	=====	=====
	Number	Number
Respondents	210	249

- Zero in this sample.

Advantages and Disadvantages of the Described Crystals

Many of the advantages and disadvantages the homemakers gave to the idea of crystals were similar to their reactions to powdered drinks now on the market. Although no packaging description was given to the homemaker, about 6 in 10 respondents from both user and nonuser households thought the packaging or container of the described crystals would be an advantage--primarily because it would be easy to store. Almost as many thought there would be preparation and serving advantages; for example, being able to use any amount, convenient and easy to prepare, and time saving and fast. (Question 11b, Placement)

About half the respondents could not think of any disadvantages for the described grapefruit juice crystals. The disadvantage that was most frequently mentioned, by about 2 in 10 homemakers, concerned taste or flavor. (Question 11c, Placement)

The overall reaction, including both advantages and disadvantages, to the product concept varied little when examined by age of the homemaker, total family income, family size, and frequency of grapefruit juice use within the user households.

Comparison of the Nutritional Value and Vitamin Content of the Described Crystals With Regular Grapefruit Juice

When asked about presumed advantages and disadvantages of the described crystals, very few respondents mentioned nutritional factors. However, when asked specifically about nutritional value or vitamin content of crystals in comparison with regular grapefruit juice, a majority of the respondents, whether from user or nonuser households, thought the crystals would be just as good or better than regular grapefruit juice:

	User households	Nonuser households
<u>Comparison of the nutritional value and vitamin content of the described crystals with regular grapefruit juice</u>	<u>-----Percent-----</u>	
Crystals better.....	9	8
Crystals just as good.....	62	54
Crystals not as good.....	14	21
Don't know.....	15	17
	<u>-----Number-----</u>	
Respondents.....	210	249

FOLLOW-UP INTERVIEWS

Homemakers' Reaction to Test Product After Using

At the conclusion of the first interview, each respondent was given a supply of either sweetened or unsweetened grapefruit juice crystals. About a week later, the interviewer returned to obtain information about the homemakers' reactions to the crystals. Again some of the product was left--sweetened crystals in households where unsweetened had already been tested and vice versa. The interviewer returned once more--this time to obtain opinions about the second type of crystals. The homemaker was asked the same questions about each product type. Therefore, the same areas of information will be reported together for both types.

Advantages of Grapefruit Juice Crystals

For both the sweetened and unsweetened crystals, the ease of preparing and ease of storing the package were mentioned most frequently as advantages by respondents from both grapefruit juice user and nonuser households.

Taste or flavor advantages were cited by about 3 in 10 homemakers. However, in both the user and nonuser households, the sweet, not bitter taste of the sweetened crystals received more mentions as an advantage than the tart, sour, not-too-sweet taste of the unsweetened product.

Generally, most homemakers indicated some advantages of the grapefruit juice crystals. Only about 2 in 10 homemakers said there were no advantages. (Question 1a, Follow-up)

Disadvantages of Grapefruit Juice Crystals

Taste or flavor--cited by about 4 to 6 homemakers in 10--was mentioned more often as a disadvantage rather than an advantage of both the sweetened and unsweetened crystals. Both types of test product received such criticisms as "bitter taste" and "too sour." However, these disadvantages were mentioned more frequently for the unsweetened form.

ease of preparation was considered a main advantage, some respondents that the crystals did not dissolve well and were hard to mix. 4 homemakers in 10 said there were no disadvantages for either on 1b, Follow-up)

Product Improvements Suggested

Respondents were asked to suggest product improvements. These suggested improvements closely paralleled their previous criticisms. About 6 in 10 homemakers recommended improving the taste or flavor of both types of crystals. The only other suggestion made by as many as 15 percent related to making the product easier to mix or dissolve. About 2 in 10 homemakers said they thought improvement was necessary.

Preference Between Grapefruit Juice Generally Used and Grapefruit Juice Crystals : Specific Characteristics

The respondents from grapefruit juice user households were asked whether they preferred their usual grapefruit juice or the sweetened or unsweetened crystals they were testing on four factors: taste, ease of preparation, texture, and color. If respondents indicated a preference, they were asked if their choice was preferred "just a little" or "a lot."

The respondents' usual grapefruit juice was generally preferred over either form of the crystals for taste and ease of preparation. About as many respondents selected both versions of the test product as selected their usual grapefruit juice for texture. However, about 6 in 10 homemakers indicated no preference for color. (Questions 2a and b, Follow-up)

Reasons for Preference Between Sweetened and Unsweetened Grapefruit Juice Crystals

After respondents had tried both the sweetened and unsweetened grapefruit juice crystals, they were asked to indicate what type they preferred. About half of the respondents from both the user and nonuser households preferred the sweetened product; about 2 in 10 had no preference. In general, an examination of the preferences for sweetened and unsweetened test products by socioeconomic factors revealed no meaningful differences;

	User households	Nonuser households
<u>Preference</u>	<u>Percent</u>	
Sweetened crystals.....	47	51
Unsweetened crystals.....	36	30
No preference.....	17	19
=====		
	<u>Number</u>	
Respondents.....	182	192

Almost all the respondents mentioned the taste of the juice made from the crystals as a reason for preferring either the sweetened or unsweetened product. Generally, the reasons given for taste preference were the same whether the respondent was from a user or nonuser household. Those who preferred the sweetened version mentioned the sweetness most frequently, but those who preferred the unsweetened specified the more natural, fresh taste most frequently.

Reactions to Packaging of Test Product

As noted previously, homemakers made favorable comments about the packaging of the crystals in answering other questions. When asked specifically what they liked or disliked about the packaging of the test product, over half the respondents said they liked the size primarily because it was easy to store and was a space saver. The protective qualities of the package were mentioned by about 4 in 10 respondents--particularly the foil, which they thought kept the product fresh.

In general, convenience of the package was mentioned by more respondents from nonuser households than from user households. Both groups especially liked the ease of opening the package. (Question 13a, Second Follow-up)

About 9 in 10 respondents said there was nothing they disliked about the package. Among the respondents who did report dislikes, a few complained about the size.

Respondents were given an opportunity to suggest packaging changes. The majority (about 6 in 10 from user households and 7 in 10 from nonuser households) said they would not make any changes. Suggestions such as making the package more colorful and attractive, using larger or smaller package, and packaging in a bottle, jar, plastic bag, or wax paper were offered. However, no individual change was suggested by more than 1 in 10 respondents.

Respondents were asked about package size preferences. The test size, which mixed to about 16 ounces of juice, was chosen by about 6 in 10 respondents, a larger package by 3 in 10, and individual serving size packages by most of the remaining respondents.

Mixing the Grapefruit Juice Crystals

Each package of both forms of crystals had the following mixing instructions: "Combine contents of this package with 2 cups (16 oz.) of water in a suitable container. Shake or stir until dissolved." Almost every respondent mentioned the printed instructions were easy to follow.

In general, respondents from grapefruit juice user or nonuser households reported using the same method for mixing either type of test crystals. The recommended amount of water was measured by most homemakers in a measuring cup. A few said they "just poured it in" or added more water. About two-thirds added the water to the crystals and the rest added the crystals to the water. About half the homemakers mixed the water and crystals by stirring, about 4 in 10 by shaking, and the remainder said it required both stirring and shaking or using a blender or mixer.

As shown below, over 6 in 10 respondents reported the grapefruit juice crystals mixed easily. The main complaint among those who felt they were hard to mix was the difficulty in dissolving the crystals.

How grapefruit juice crystals mixed	User households		Nonuser households	
	Sweetened	Unsweetened	Sweetened	Unsweetened
	-----Percent 1/-----			
Crystals mixed easily.....	65	65	65	63
Crystals hard to mix.....	35	35	35	37
Don't dissolve fast enough.....	18	20	21	17
Requires stirring and shaking.....	10	10	10	9
Doesn't dissolve or mix..	9	9	9	12
Doesn't dissolve, unspecified.....	5	3	5	6
Requires stirring, shaking before each usage.....	2	1	1	3
Miscellaneous.....	3	5	2	1
	=====			
	-----Number-----			
Respondents.....	190	189	199	209

1/ Percentages add to more than the group totals shown because some respondents gave more than one reply.

How and When Grapefruit Juice Crystals Were Served

Homemakers were asked to serve the juice made from the crystals to every household member 12 years or over. These members were to complete their rating forms the first time the juice was served to them. More than 8 in 10 homemakers reported the juice had been served cold when it was rated; about 6 in 10 said it had been served less than 2 hours after preparation.

In grapefruit juice user households, almost 9 in 10 respondents served the test product again after the initial trial and rating. In nonuser households, additional serving was reported by better than 7 in 10 homemakers.

Approximately half the respondents in the user households and about 4 in 10 in the nonuser households said they had used all of both types of the test product that had been given to them. Reasons such as dislike, unspecified; dislike taste; too busy, didn't have time; and have a variety of other juices on hand, were given for not using all of both the sweetened and unsweetened types.

Answers to the question of when the crystals were used paralleled the responses for general use of grapefruit juice by the respondents from user households; that is, breakfast was the most popular time for using the juice made from both types of crystals, and the juice was used more frequently between and after meals than at lunch or evening meal.

Ways Grapefruit Juice Crystals Would be Used by the Homemakers

To obtain another indication of homemakers' reactions to a crystal form of citrus juice, respondents were asked how they would use the crystals. As the following tabulation shows, about half of them said they would use the test product as a breakfast juice. Almost the same proportions reported they would use it as a between meal juice, drink, or snack. Generally, most of the uses mentioned indicated that these respondents were considering typical uses for juice rather than specialized uses such as a mixer for drinks or for trips or camping.

	<u>User households</u>	<u>Nonuser households</u>
<u>Ways homemakers would use the crystals</u>	<u>-----Percent-----</u>	
As a breakfast juice, drink.....	51	49
As a between meal juice, drink, snack.....	49	40
As a juice drink, unspecified.....	10	10
As a mixer, mix with drinks, juices.....	10	16
Dietary aid.....	7	5
In recipes.....	6	4
Before lunch or dinner appetizer....	6	3
As a punch.....	5	5
Travel and trips, camping.....	4	2
Would not use.....	6	10
Miscellaneous.....	4	4
Not specified.....	1	3
<u>-----Number-----</u>		
Respondents.....	182	192

Purchase Intentions

Although answers to questions on future intent to purchase cannot be considered predictors of future purchases, they do indicate whether respondents were pleased with the test product. Since expressed buying intentions were about the same whether the sweetened or unsweetened version was preferred, the findings are separated only into replies from user and nonuser households.

As might be expected, respondents from user households expressed greater positive buying interest than respondents from nonuser households. Nevertheless, positive buying interest was reported by about 4 in 10, even in nonuser households. However, about one-fourth of the respondents--whether from user or nonuser households--said they definitely would not buy the crystals if they were available in local stores:

	<u>User</u> <u>households</u>	<u>Nonuser</u> <u>households</u>
<u>Purchase intent</u>	<u>-----Percent-----</u>	
Definitely buy.....	24	10
Probably buy.....	28	28
Might or might not buy.....	12	17
Probably not buy.....	10	18
Definitely not buy.....	26	27
=====		
	<u>-----Number-----</u>	
Respondents.....	182	192

A question of special interest was whether the homemakers who indicated they were interested in purchasing the crystals were the same ones who spoke favorably of the taste. The homemakers were isolated as individual groups by their indication of future intent to buy or not buy. An examination was then made of their suggestions for improving the test product and their opinions of the advantages and disadvantages of the crystals they had tested. This analysis indicated that among homemakers who thought they would be interested in buying the crystals, the taste of the juice made from the crystals was the advantage cited most frequently--by about 5 in 10. However, the taste also received the most criticism--3 in 10 considered it a disadvantage and 4 in 10 suggested the taste be improved.

Again disregarding the indication of preference for either the sweetened or unsweetened test product, a comparison of purchase intentions with their previously expressed trying intentions--based only on a description of the product--indicates that both users and nonusers of grapefruit juice were more enthusiastic about the product concept than both versions of the product after trying them. (Summary Question 11a, Placement and Question 11a, Second Follow-up)

Homemakers were asked how much they would expect to pay for an amount of grapefruit juice crystals that would reconstitute into a quart of juice. Whether the homemakers' replies were examined as a total group or separated by their preference for sweetened or unsweetened crystals, the median price was around 28 cents.

To obtain a more realistic price evaluation, each homemaker was then told to assume that grapefruit juice, in general, costs 32 cents per quart. She was asked to indicate the highest price--ranging from 4 cents a quart more to 4 cents a quart less--she would pay for an amount of crystals that would mix into a quart of juice. About half the homemakers said they would pay the same price or more for the crystals. However, about one-fourth of the respondents reported they did not think they would buy at any price.

The findings from the "aided" question about price--relative amount at which they would buy based on a quart of grapefruit juice costing 32 cents--suggest a favorable reaction toward the crystals by about 6 in 10 homemakers who said they would buy the test product at a price higher than the median expected price (28 cents). (Question 11c, Second Follow-up)

To elicit another indication of attitude toward the crystals, respondents from grapefruit juice user households were asked what proportion of the grapefruit juice normally used they would buy in crystal form if it were available at the same cost per serving as their usual grapefruit juice. Noted previously, the grapefruit juice user homemakers had indicated that in their households grapefruit juice was used most often for breakfast. It was also used frequent as a between meal snack beverage. When asked specifically how they would use the crystals they indicated the same order of use. The amount of substitution given was almost identical whether they preferred the sweetened or unsweetened version. Around one-third of the user respondents said they would buy more than half their grapefruit juice needs in the crystal form. Approximately 3 in 10 respondents from user households said they would not substitute any of the crystal form for the grapefruit juice now used.

As is the case with respondents' future intent to purchase, the amount of future substitution intended in user households cannot be considered a prediction of future purchases. However, the findings suggest a favorable reaction to the test product because some degree of substitution was mentioned by 7 in 10 of these respondents:

<u>Amount of substitution.</u>		<u>User households</u>
		<u>-----Percent-----</u>
Less than 25 percent.....		18
25 to 50 percent.....		18
51 to 75 percent.....		9
76 to 100 percent.....		25
None.....		28
Not specified.....		2
		=====
		<u>-----Number-----</u>
Respondents		182

Overall Reactions of All Household Members

All household members 12 years and over were asked to use the test product and to complete a one-page form immediately after their first serving. The form contained rating scales on which the individuals could indicate their opinions about the test product and grapefruit juice in general as well as questions on likes and dislikes of the crystals tested.

Test Product Ratings

A nine-point hedonic rating scale was used from "dislike extremely"--with a numerical value of 1--to "like extremely"--with a numerical value of 9. The highest average score (5.66 out of a possible 9.00) was obtained from homemakers from user households for the sweetened version of grapefruit juice crystals. Also, the homemakers were more favorable to both forms of the crystals than were other household members. As might be expected, members of grapefruit juice user households rated both forms of the crystals higher than the nonuser household members. (Question 1, Household Member Rating Form)

Rating of Grapefruit Juice in General

The ratings of grapefruit juice in general were similar whether trying the sweetened or unsweetened crystals. Among all the groups completing the rating forms, the average score for grapefruit juice in general was higher than the average score for either form of the crystals. However, the average ratings of grapefruit juice paralleled the ratings of the crystals; that is, the homemakers' ratings were more favorable than those of all other household members, and members of user households were more favorable than members of nonuser households. (Question 4, Household Member Rating Form)

Average Ratings for the Grapefruit Juice Crystals by Males and Females

There was an insufficient number of male homemakers to meaningfully compare their average ratings of the crystals with those of female homemakers. However, there were no significant differences in the average ratings of the juice, regardless of sex, among the other family members whether they were from user or nonuser households, or rating the sweetened or unsweetened version of the test product.

Average Ratings for the Grapefruit Juice Crystals by Age

In the grapefruit juice user households, there were no significant differences in the average ratings of the various age groups among those who rated the test crystals. Hence, no one age group seemed to favor either type of crystals more than the other age groups. In the nonuser households, the average ratings for the sweetened and unsweetened crystals were lower for the age 12 to 18 than for any of the other age groups.

Average Rating Using Positive/Negative Sequence

To investigate the potential of positional bias, about half the Household Member Rating Forms distributed to the respondents contained the positive order first on the nine-point rating scale and the rest contained the negative order first. The distribution was well matched by age, sex, and household composition. A comparison of those using the positive or negative first rating forms was made among user and nonuser household members for both forms of the crystals. There were no significant differences in the ratings of either version of the test product by sequence. Therefore, the average ratings are reported only for user and nonuser households, as follows:

Product rated	User households		Nonuser households	
	Positive	Negative	Positive	Negative
	order	order	order	order
	first	first	first	first
:-----Average numerical score-----				
Grapefruit juice crystals.....	5.24	5.31	4.54	4.64
Grapefruit juice in general.....	7.03	6.90	5.84	5.27

The differences in the ratings were significant only among the members from grapefruit juice nonuser households rating grapefruit juice in general--the positive order first scale obtained a higher average score than the negative first scale.

Features Particularly Liked About the Test Product

Taste or flavor and ease of preparation were most frequently recorded on the rating forms completed by eligible household members in answer to questions on particular likes about both versions of the grapefruit juice crystals. However, about one-third to one-half of the household members indicated there was nothing they especially liked. As might be expected, more homemakers recorded a positive reaction to factors regarding the ease of preparing and storing the crystals than the other household members. (Question 2, Household Member Rating Form)

Features Particularly Disliked About the Test Product

Although about 3 in 10 household members commented favorably on the taste or flavor of the crystals, on the average, about half the persons eligible to complete the forms recorded critical comments. Their major complaints were that both the sweetened and unsweetened test products were too bitter, too sour, tasted of rind, not natural or fresh tasting, and left an aftertaste.

The only other complaint recorded by as many as 1 in 10 respondents was that the crystals did not dissolve well or quickly. From 3 to 4 respondents in 10 indicated there was nothing they particularly disliked about either type of test product. (Question 3, Household Member Rating Form)

Reaction of Children Under Age 12 Who Tried Test Product

Homemakers were not asked to serve the test product to children under age 12; neither were these children eligible to complete the rating form. However, because of some interest in younger children's reactions to the crystals, respondents were asked to describe the reactions of any children under age 12 who had tried them.

About 5 in 10 user households and 4 in 10 nonuser households had no children under age 12, and around 1 in 10 households had children under age 12 who had not tried the products. In the households where children under 12 years had tried the test juices, respondents, in general, indicated only taste reactions of these children. The reactions reported suggest that these younger children did not favor the test product. Except for the sweetened version in the user households, which received a few more favorable taste mentions than unfavorable mentions, about two taste dislikes were reported to one taste like. The favorable comments cited were primarily about the natural taste; whereas, most of the criticisms concerned the not natural, too sour, tart taste.

APPENDIX

Question 3c, Placement: Why do you generally use canned grapefruit
Reported only for those who said canned grapefruit juice was the form
generally used.

	Canned grapefruit juice	
	--- Percent 1/--	
<u>Reasons for use</u>		
Packaging.....	62	37
Easy to prepare, serve.....		14
Easy to store, keep on hand.....		6
Stays fresh, won't spoil.....		4
Size, quantity.....		4
Convenient, unspecified.....		3
Easy for children to handle.....		
	27	
Taste, flavor.....		11
Good taste, flavor, unspecified.....		8
Not too sweet.....		4
Natural, fresh taste.....		4
Other taste, flavor.....		
	11	
Cost less.....	11	
Family members like it.....	9	
Availability in stores.....	7	
Just like it, habit.....		
Dietary reasons (weight watching, on a diet, curbs appetite, etc.).....	6	
Medical reasons (allergies, doctor's orders, health, etc.).....	2	
Nutritional value.....	2	
Miscellaneous.....	5	

	--- Number ---	
Respondents.....	180	

1/ Percentages may add to more than 100 (or group totals shown) because
some respondents gave more than one reply.

Question 3d, Placement: Why do you generally use (canned, frozen concentrate, or chilled) orange juice? Reported only for those who said canned, frozen concentrate, or chilled orange juice was the form generally used.

Reasons for use	Orange juice forms		
	Canned	Frozen concentrate	Chilled
	Percent ^{1/}		
Taste, flavor.....	16	71	65
Good taste, flavor unspecified..	7	13	15
Natural, fresh taste.....	3	52	48
Not sweet tasting.....	3	2	-
No canned taste.....	-	7	3
Other taste, flavor.....	4	4	2
Packaging, convenience.....	74	47	48
Easy to prepare, serve.....	41	21	27
Easy to store, keep on hand.....	20	18	2
Convenient, unspecified.....	8	3	1
Children can prepare.....	8	1	1
Size, quantity good.....	5	4	1
Stays fresh, won't spoil.....	3	4	2
Delivered to home.....	-	-	21
Other packaging, convenience....	7	3	2
Cost less, unspecified.....	14	3	4
Family members like.....	10	13	27
Nutritional value.....	5	4	6
Cost less than other forms.....	5	8	-
Consistency of juice.....	1	2	9
Miscellaneous.....	6	5	1
	Number		
Respondents.....	102	206	94

^{1/} Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

- Zero in this sample.

Question 5d, Placement: Thinking in terms of the powdered or crystallized forms that you mentioned, what advantages, if any, do you think they have over other forms of fruit drinks and juices? Asked only of those who said they had used a powdered or crystallized form.

	User households	Nonuser households
<u>Advantages mentioned for powdered or crystallized fruit drinks</u>	----- Percent 1/-----	
Preparation.....	68	56
Fast, quick to prepare.....	18	9
Easy to prepare, unspecified.....	18	18
Can make any amount.....	16	12
Children can prepare themselves.....	12	11
Mix with water, ready to drink.....	7	9
Other preparation.....	5	3
Packaging, container.....	49	47
Easy to store.....	34	30
Retains freshness, won't spoil.....	11	7
No need to refrigerate before using.....	7	8
Travel, easy to carry with you.....	6	8
Size of package, quantity.....	2	7
Other packaging, container.....	3	5
Taste, flavor.....	30	21
Good taste, flavor, unspecified.....	18	7
Pre-sweetened.....	6	8
Natural, fresh taste.....	5	3
Other taste, flavor.....	2	4
Cost less, unspecified.....	15	25
Nutritional value.....	7	3
Refreshing, satisfying.....	3	4
Medical reasons.....	-	3
Dietary reasons.....	-	3
Cost less than other forms.....	-	7
Miscellaneous.....	4	5
None.....	4	-
Not specified.....	1	3
<hr/> <hr/>		
	----- Number -----	
Respondents.....	103	120

Advantages add to more than 100 (or group totals shown) because respondents gave more than one reply.
in this sample.

Question 5e, Placement: What disadvantages, if any, do you think the powdered or crystallized forms have over other forms of fruit drinks or juices? Asked only of those who said they had used a powdered or crystallized form.

<u>Disadvantages mentioned for powdered or crystallized fruit drinks</u>	<u>User households</u>	<u>Nonuser households</u>
	----- <u>Percent</u> <u>1/</u> -----	-----
Taste, flavor.....	25	28
Not natural, fresh taste.....	13	13
Bad taste, flavor, unspecified.....	8	7
Cannot control sweetness level.....	2	8
Other taste, flavor.....	3	2
Preparation.....	15	9
Children unable to prepare.....	4	3
Hard to prepare, unspecified.....	3	3
Must mix with water.....	3	1
Not fast, quick.....	3	1
Must add sugar.....	2	3
Other preparation.....	2	2
Not nutritional.....	3	9
Medical reasons.....	3	1
Packaging.....	2	3
Consistency, texture.....	1	3
Miscellaneous.....	6	4
None.....	48	48
Not specified.....	3	2
<hr/>		
	----- <u>Number</u> -----	-----
Respondents.....	103	120

1/ Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

Summary of questions 6a and 6b, Placement: In general, why is grapefruit juice used in this household? On the average, how often has grapefruit juice been used in your household in the past year? Reported only for those who said they had used grapefruit juice in the past 6 months.

Reasons mentioned for using grapefruit juice	User households		
	Total	Once a week or more	Less than once a week
	----- Percent ^{1/} -----		
Taste, flavor.....	38	41	33
Good taste, flavor, unspecified.	20	22	15
Tangy, sour, tart.....	14	12	17
Not sweet tasting, bitter.....	7	9	3
Other taste, flavor.....	2	3	1
Dietary reasons.....	28	33	18
Nutritional value.....	26	28	22
Variety.....	17	12	26
Just like it.....	12	12	11
Refreshing, thirst quenching.....	7	6	8
Good for, prevents colds, flu.....	5	6	4
Medical reasons.....	5	5	6
Easy to prepare.....	3	5	-
Miscellaneous.....	3	4	3
	----- Number -----		
Respondents.....	210	138	72

^{1/} Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

- Zero in this sample.

Question 9a, Placement: Now, thinking in terms of canned grapefruit juice, what do you think are the advantages, if any, of canned grapefruit juice? Asked only of those who said they had used grapefruit juice in the past 6 months.

<u>User households</u>	
<u>Advantages</u>	<u>-- Percent 1/--</u>
Preparation, serving	60
Convenient, easy to prepare.....	24
Ready to drink	18
Time saving, fast.....	7
No need to mix.....	5
Easy to serve.....	3
Children can serve themselves.....	3
Other preparation, serving advantages.....	5
Packaging, container.....	39
Easy to store.....	19
Retains freshness, won't spoil.....	10
Size of package, quantity.....	7
No need to refrigerate before using.....	7
Safer, can't break.....	4
Other packaging, container.....	3
Taste, flavor.....	12
Good taste, unspecified.....	7
Natural, fresh tasting.....	3
Other taste, flavor.....	4
Cost less, unspecified.....	8
Cost less than other forms.....	3
None.....	7
Miscellaneous.....	7
Not specified.....	4
<hr/>	
<hr/>	
<u>----- Number -----</u>	
Respondents.....	210

1/ Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

Question 9b, Placement: What are the disadvantages, if any, of canned grapefruit juice? Asked only of those who said they had used grapefruit juice in the past 6 months.

<u>User households</u>	
<u>Disadvantages</u>	<u>-- Percent 1/--</u>
Packaging, container.....	22
Tinny, metallic canned taste.....	12
Hard to store, takes up space.....	9
Other packaging, container.....	4
Taste, flavor.....	14
Not natural, fresh tasting.....	7
Not sweet enough, bitter.....	3
Bad taste, flavor, unspecified.....	3
Other taste, flavor.....	1
Preparation, serving.....	8
Must put into different containers.....	5
Other preparation, serving.....	3
Miscellaneous.....	2
None.....	55
Not specified.....	3
<hr/>	
	<u>----- Number -----</u>
Respondents.....	210

1/ Percentages may add to more than 100 (or group totals shown) because some respondents gave more than one reply.

Question 10a, Placement: Now, thinking in terms of frozen concentrate grapefruit juice, what do you think are the advantages, if any, of frozen concentrate grapefruit juice? Asked only of those who said they had used grapefruit juice in the past 6 months.

		<u>User households</u>	
<u>Advantages</u>		-- <u>Percent</u> <u>1/</u> --	
Taste, flavor.....	37		
Natural, fresh tasting.....		26	
Good taste, flavor, unspecified.....		10	
Other taste, flavor.....		3	
Packaging, container.....	35		
Easy to store.....		24	
Size of package, quantity.....		7	
Retains freshness, won't spoil.....		6	
Good for travel.....		1	
Preparation, serving.....	18		
Cold when served.....		7	
Convenient, easy to prepare.....		6	
Other preparation, serving.....		7	
Miscellaneous.....	7		
None.....	14		
Don't know, never tried.....	18		
		<hr/> <hr/>	
		----- <u>Number</u> -----	
Respondents.....	210		

1/ Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

Question 10b. Placement: What are the disadvantages, if any, of frozen concentrate grapefruit juice? Asked only of those who said they had used grapefruit juice in the past 6 months.

		<u>User households</u>	
<u>Disadvantages</u>		-- <u>Percent</u> <u>1</u> /--	
Preparation, serving.....	40		
Must thaw out first.....		21	
Must mix with water.....		13	
Takes time, slow.....		11	
Inconvenient, hard to prepare.....		4	
Not easy to serve.....		3	
Other preparation, serving.....		4	
Packaging, container.....	18		
Have to keep frozen.....		8	
Hard to store.....		6	
Other packaging, container.....		4	
Cost more, unspecified.....	5		
Cost more than other forms.....	4		
Miscellaneous.....	4		
None, no disadvantages.....	30		
Don't know, never tried.....	12		
		<hr/> <hr/>	
		----- <u>Number</u> -----	
Respondents.....	210		

1/ Percentages may add to more than 100 (or group totals shown) because some respondents gave more than one reply.

Summary of Questions 11a, Placement and 11a, Second Follow-up: Here is a description of a new form of grapefruit juice, please read it carefully...How likely would you be to try this kind of product? Using this rating scale, please tell me how likely you would be to buy the grapefruit juice crystals if they were available in local stores?

Trying intent	Buying intent			
	User households		Nonuser households	
	Positive <u>1</u> /	: Unfavorable or Undecided <u>2</u> /	Positive	: Unfavorable or Undecided
	<u>Percent</u>			
Definitely try.....	47	34	28	12
Probably try.....	34	43	51	35
Might try.....	13	15	12	24
Probably not try.....	5	8	8	22
Definitely not try....	1	-	1	7
<u>Number</u>				
Respondents.....	94	88	73	117

1/ Includes definitely buy and probably buy.

2/ Includes might or might not buy, probably not buy, and definitely not buy.

- Zero in this sample.

Question 11b, Placement: In your opinion, what would be the advantages, if any, of grapefruit juice crystals?

	User households	Nonuser households
<u>Assumed advantages for the described grapefruit juice crystals</u>	<u>-----Percent 1/-----</u>	
Packaging, container.....	61	59
Easy to store, can keep anywhere.....	39	40
Retain freshness, won't spoil.....	12	16
No need to refrigerate until mixed.....	12	9
Good for travel.....	8	4
Easy to carry, lightweight.....	4	3
Size of package.....	4	4
No need to freeze.....	1	3
Other packaging, container.....	2	2
Preparation, serving.....	57	53
Use any amount, leftovers.....	22	14
Time saving, fast.....	14	11
Convenient, easy.....	11	17
Just mix with water.....	11	11
Children can serve themselves.....	3	3
No need to thaw out.....	2	3
Other preparation, serving.....	2	3
Taste, flavor.....	16	12
Natural, fresh tasting.....	10	7
Taste, flavor, unspecified.....	4	4
Other taste, flavor.....	3	1
Cost less.....	6	3
Nutritional value.....	5	8
Miscellaneous.....	4	3
None.....	2	4
Not specified.....	4	6
<u>=====</u>		
	<u>-----Number-----</u>	
Respondents.....	210	249

1/ Percentages may add to more than 100 (or group totals shown) because some respondents gave more than one reply.

Question 11c, Placement: What, if any, would be the disadvantages of grapefruit juice crystals?

	User households	Nonuser households
<u>Assumed disadvantages for the described grapefruit juice crystals</u>	-----Percent 1/-----	
Taste, flavor.....	19	19
Not natural, fresh tasting.....	8	10
Taste, flavor, unspecified.....	8	4
Not sweet enough, bitter.....	2	4
Other taste, flavor.....	1	1
Preparation, serving.....	11	9
Must mix with water.....	6	2
Takes time to prepare.....	3	3
Inconvenient, hard to prepare.....	-	3
Other preparation, serving.....	3	2
Packaging, container.....	7	6
Humidity, moisture would affect.....	4	4
Wouldn't keep product fresh.....	3	2
Other packaging, container.....	1	-
Cost more.....	3	1
Miscellaneous.....	2	5
None.....	48	49
Not specified.....	12	13
	=====	
	-----Number-----	
Respondents.....	210	249

1/ Percentages may add to more than 100 (or group totals shown) because some respondents gave more than one reply.

- Zero in this sample.

Question 1a, Follow-up: Now that you've tried this product, what are the advantages of the grapefruit juice crystals, if any?

Advantages	User households		Nonuser households	
	Sweetened	Unsweetened	Sweetened	Unsweetened
	-----Percent 1/-----			
Preparation.....	50	47	62	55
Easy to mix, mixes well.....	20	15	17	20
Easy to prepare.....	11	7	18	11
Fast, quick to prepare.....	7	8	14	9
Can make desired amount.....	7	7	6	5
Dissolves well, easily, fast.....	5	7	6	9
Mix with water, ready to use.....	3	3	9	5
Convenient, unspecified.....	1	4	4	3
Other preparation.....	1	3	1	2
Packaging.....	47	43	42	50
Easy to store, saves space.....	35	32	31	35
Retains freshness.....	6	7	6	7
Good for travel.....	6	5	4	8
No need to refrigerate.....	5	6	8	10
Lightweight.....	5	3	1	2
Not frozen.....	-	1	2	3
Other packaging.....	4	3	3	2
Taste, flavor.....	31	27	31	26
Natural, fresh taste, flavor.....	12	15	16	14
Sweet, not bitter.....	12	5	14	4
Good taste, flavor.....	9	5	6	6
Tart, sour, tangy, not too sweet...	3	4	1	4
Thirst quenching.....	2	2	2	3
Dietary reasons.....	1	1	2	3
None.....	17	20	15	13
Miscellaneous.....	11	8	4	7
	-----Number-----			
Respondents.....	190	189	199	209

1/ Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

- Zero in this sample.

Question 1b, Follow-up: What are the disadvantages of grapefruit juice crystals?

Disadvantages	User households		Nonuser households	
	Sweetened	Unsweetened	Sweetened	Unsweetened
	-----Percent 1/-----			
Taste, flavor.....	53	58	41	49
Bitter taste.....	11	21	15	18
Not natural, fresh tasting.....	11	9	7	8
Taste, flavor, unspecified.....	9	9	4	4
Taste of rind.....	6	13	2	2
Too sweet.....	6	-	4	1
Left an aftertaste.....	5	9	8	4
Too sour.....	3	13	8	16
Paper taste.....	3	2	2	2
Medicinal, chemical taste.....	3	2	1	1
Other taste, flavor.....	8	4	7	4
Preparation.....	23	19	20	19
Does not dissolve well.....	15	14	15	13
Hard to mix, does not mix well.....	5	4	5	3
Not fast, quick to prepare.....	3	2	2	2
Other preparation.....	4	2	2	2
Consistency, texture.....	5	6	4	4
Packaging.....	4	2	1	2
Aroma.....	4	3	3	3
Don't like grapefruit in any form.....	-	-	4	4
None.....	22	25	38	29
Miscellaneous.....	4	4	5	5
	-----Number-----			
Respondents.....	190	189	199	209

1/ Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

- Zero in this sample.

Questions 2a and 2b, Follow-up: Now I'd like you to compare the grapefruit juice you usually use with the grapefruit juice crystals on a number of characteristics. For each characteristic I mention please tell me whether you prefer the grapefruit juice you usually use or the grapefruit juice crystals. Do you prefer it a lot or just a little? Asked only of those who said they had used grapefruit juice in the past 6 months.

Type of product tested and preference	User households			
	Taste/ flavor	Ease of preparation	Texture (consistency)	Color
	<u>Percent</u>			
<u>Sweetened crystals</u>				
Prefer:				
Usual grapefruit juice.....	61	49	36	18
A little more.....	15	17	11	6
A lot more.....	46	32	25	12
Grapefruit juice crystals.....	25	35	33	18
A little more.....	8	15	21	14
A lot more.....	17	20	12	4
No preference.....	14	16	31	64
	<u>Number</u>			
Respondents	190	190	190	190
	<u>Percent</u>			
<u>Unsweetened crystals</u>				
Prefer:				
Usual grapefruit juice.....	64	48	33	18
A little more.....	14	17	7	5
A lot more.....	50	31	26	13
Grapefruit juice crystals.....	27	35	35	25
A little more.....	10	18	18	13
A lot more.....	17	17	17	12
No preference.....	9	17	32	57
	<u>Number</u>			
dents.....	189	189	189	189

Question 11c, Second Follow-up: Let us assume that grapefruit juice in general costs 32¢ per quart. Would you look at the card please, and tell me what is the highest price at which you would buy a package of grapefruit juice crystals which would mix into a quart.

<u>Highest price would pay for grapefruit juice crystals</u>	<u>User households</u>	<u>Nonuser households</u>
	<u>-----Percent-----</u>	
4¢ a quart more than grapefruit juice.....	7	6
3¢ a quart more than grapefruit juice.....	7	3
2¢ a quart more than grapefruit juice.....	7	6
The same.....	26	27
2¢ a quart less than grapefruit juice.....	7	6
3¢ a quart less than grapefruit juice.....	5	9
4¢ a quart less than grapefruit juice.....	15	16
Don't think I would buy at any price.....	24	26
Not specified.....	2	1
<u>=====</u>		
	<u>-----Number-----</u>	
Respondents.....	182	192

Question 13a, Second Follow-up: Overall, what if anything, did you like about the packaging of this product?

	User households	Nonuser households
Said they liked:	-----Percent <u>1</u> /-----	
Size.....	53	59
Easy to store, space saver.....	41	49
Small, thin, compact.....	12	14
Lightweight.....	3	1
Good size for small family.....	3	5
Size, unspecified.....	3	1
Each pack is individually wrapped.....	2	2
Protective qualities.....	42	35
Foil keeps product fresh.....	20	19
Moisture proof, doesn't lump.....	11	4
Tightly sealed, air tight.....	9	9
No need for refrigeration.....	4	5
Sturdy, won't break, leak out.....	4	3
Other protective qualities.....	4	2
Convenience.....	39	52
Ease of opening package.....	23	32
Can make desired amount.....	5	3
Convenience, unspecified.....	4	3
Good for travel, camping.....	4	5
Easy to dispose of.....	3	4
Easy to pour out of package.....	3	2
Easy to serve, unspecified.....	2	4
Not messy, no spilling.....	1	4
Easy to follow directions.....	1	4
Pre-measured.....	1	5
Appearance.....	8	4
Color.....	5	3
Liked, unspecified.....	7	3
Nothing liked.....	4	4
Not specified.....	2	2
=====		
	----- <u>Number</u> -----	
Respondents.....	182	192

1/ Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

Question 1, Household Member Rating Form: Now that you've tried the grape-fruit juice crystals, please tell us how much you like or dislike them by checking the statement below which best describes your opinion about this product. Asked only of members aged 12 or over.

Ratings for the sweetened test product	User households		Nonuser households	
	Respondents	All others	Respondents	All others
	-----Percent-----			
Dislike extremely.....	8	13	8	14
Dislike very much.....	8	11	10	12
Dislike moderately.....	8	7	11	10
Dislike slightly.....	7	10	9	9
Neither like nor dislike.	3	7	6	7
Like slightly.....	12	9	13	8
Like moderately.....	21	14	23	19
Like very much.....	21	14	18	8
Like extremely.....	6	6	1	4
Did not test.....	2	5	*	6
Not specified.....	4	4	1	3
	=====			
	-----Number-----			
Respondents.....	184	294	207	332
Average.....	5.66	4.94	5.23	4.60

* Less than 1 percent.

Question 1, Household Member Rating Form: Now that you've tried the grape-fruit juice crystals, please tell us how much you like or dislike them by checking the statement below which best describes your opinion about this product. Asked only of members aged 12 or over.

Ratings for the unsweetened test product	User households		Nonuser households	
	Respondents	All others	Respondents	All others
	<u>Percent</u>			
Dislike extremely.....	10	11	15	24
Dislike very much.....	11	12	15	14
Dislike moderately.....	4	7	6	6
Dislike slightly.....	10	8	7	7
Neither like nor dislike...	5	6	7	8
Like slightly.....	11	13	10	12
Like moderately.....	18	20	22	9
Like very much.....	23	8	15	8
Like extremely.....	5	5	1	1
Did not test.....	-	4	1	6
Not specified.....	3	6	1	5
	<u>Number</u>			
Respondents.....	193	297	199	324
Average.....	5.45	4.93	4.81	3.92

- Zero in this sample.

Question 2. Household Member Rating Form: What, if anything, did you particularly like about the grapefruit juice crystals?

Particular likes for the sweetened test product	User households		Nonuser households	
	Respondents	All others	Respondents	All others
	-----Percent 1/-----			
Taste, flavor.....	30	24	29	22
Natural, fresh.....	16	10	12	11
Sweetness.....	7	5	11	5
Taste, flavor, unspecified.....	6	4	5	5
Tangy, sour, tart.....	2	3	1	*
Other taste, flavor.....	3	3	4	4
Preparation.....	28	10	30	11
Easy to prepare.....	12	5	11	4
Easy to mix.....	8	1	7	2
Convenient.....	3	2	6	2
Can make desired amount.....	3	1	2	1
Fast, quick to prepare..	2	*	3	2
Dissolves easily, fast..	1	1	4	1
Packaging, container.....	13	3	9	2
Easy to store.....	9	3	8	1
Other packaging, container.....	6	*	2	1
Thirst quenching.....	3	4	3	1
Everything.....	2	2	1	3
Nothing.....	34	50	40	56
Miscellaneous.....	4	1	2	-
Not specified.....	7	14	4	11
	=====			
	-----Number-----			
Respondents.....	181	278	206	312

1/ Percentages may add to more than 100 (or group totals shown) because some respondents gave more than one reply.

* Less than 1 percent.

- Zero in this sample.

Question 2, Household Member Rating Form: What, if anything, did you particularly like about the grapefruit juice crystals?

Particular likes for the unsweetened test product	User households		Nonuser households	
	Respondents	All others	Respondents	All others
	-----Percent 1/-----			
Taste, flavor.....	28	25	23	19
Natural, fresh.....	16	11	14	13
Taste, flavor, unspecified.....	6	8	6	3
Not too sweet.....	3	3	1	2
Sour, tangy, tart.....	1	2	2	3
Other taste, flavor....	3	1	2	1
Preparation.....	28	10	25	7
Easy to prepare.....	11	4	10	2
Easy to mix.....	9	3	8	2
Convenient, unspecified.....	4	2	3	1
Dissolves easily, fast.	2	*	3	*
Other preparation.....	3	1	4	2
Packaging, container.....	17	1	13	1
Easy to store.....	15	1	10	1
Other packaging, container.....	6	-	5	-
Thirst quenching.....	4	2	3	1
Nothing.....	33	50	47	59
Everything.....	2	3	1	2
Miscellaneous.....	6	3	8	2
Not specified.....	9	14	3	12
	-----Number-----			
	193	285	197	304

1 100 (or group totals shown) because reply.

Question 3, Household Member Rating Form: What, if anything, did you particularly dislike about the grapefruit juice crystals?

Particular dislikes for the: sweetened test product	User households		Nonuser households	
	Respondents	All others	Respondents	All others
	-----Percent 1/-----			
Taste, flavor.....	53	45	47	42
Bitter taste.....	11	9	8	11
Taste, flavor, unspecified.....	9	9	10	5
Tastes of rind.....	7	3	1	1
Left an aftertaste.....	7	5	5	3
Too sweet.....	6	3	4	1
Not natural, fresh.....	6	7	6	5
Too strong.....	3	2	2	2
Too sour.....	2	6	11	13
Bland, flat.....	2	1	3	2
Other taste, flavor.....	10	6	5	5
Doesn't dissolve well, quickly.....	13	4	11	2
Aroma.....	3	1	3	2
Nothing.....	32	38	38	37
Miscellaneous.....	4	6	8	10
Not specified.....	6	9	5	11
	-----Number-----			
Respondents.....	181	278	206	312

1/ Percentages may add to more than 100 (or group totals shown) because some respondents gave more than one reply.

Question 3, Household Member Rating Form: What, if anything, did you particularly dislike about the grapefruit juice crystals?

Particular dislikes for the: unsweetened test product	User households		Nonuser households	
	Respondents	All others	Respondents	All others
	-----Percent 1/-----			
Taste, flavor.....	57	49	51	50
Bitter taste.....	14	10	17	13
Too sour.....	11	15	14	16
Taste, flavor, unspecified.....	10	11	9	8
Tastes of rind.....	9	4	5	2
Left an aftertaste.....	6	6	4	5
Not natural, fresh.....	5	5	6	5
Too strong.....	4	1	2	1
Bland, flat.....	3	2	2	3
Other taste, flavor.....	8	6	7	6
Doesn't dissolve well, easily.....	12	3	10	2
Color, appearance.....	3	-	-	*
Aroma.....	2	1	4	3
Nothing.....	32	37	36	31
Miscellaneous.....	6	6	5	9
Not specified.....	3	9	3	8
	-----Number-----			
Respondents.....	193	285	197	304

1/ Percentages add to more than 100 (or group totals shown) because some respondents gave more than one reply.

* Less than 1 percent.

- Zero in this sample.

Question 4, Household Member Rating Form: You have already told us your opinion about the grapefruit juice crystals. Now, we would like you to think about grapefruit juice in general. Please tell us how much you like or dislike grapefruit juice by checking the statement below which best describes your opinion about grapefruit juice in general. Asked only of members aged 12 or over.

Rating for grapefruit juice in general after testing the sweetened test product	User households		Nonuser households	
	Respondents	All others	Respondents	All others
	-----Percent-----			
Dislike extremely.....	2	4	6	9
Dislike very much.....	2	4	4	10
Dislike moderately.....	3	4	7	6
Dislike slightly.....	2	3	8	8
Neither like nor dislike.	4	6	9	8
Like slightly.....	5	12	16	13
Like moderately.....	28	21	28	22
Like very much.....	36	27	17	14
Like extremely.....	14	13	2	5
Not specified.....	4	1	3	5
	-----Number-----			
Respondents.....	181	278	206	312
Average.....	7.16	6.56	5.75	5.35

Question 4, Household Member Rating Form: You have already told us your opinion about the grapefruit juice crystals. Now, we would like you to think about grapefruit juice in general. Please tell us how much you like or dislike grapefruit juice by checking the statement below which best describes your opinion about grapefruit juice in general. Asked only of members aged 12 or over.

Ratings for grapefruit juice in general after testing the unsweetened test product	User households		Nonuser households	
	Respondents	All others	Respondents	All others
	-----Percent-----			
Dislike extremely.....	1	3	8	9
Dislike very much.....	2	4	6	9
Dislike moderately.....	3	3	5	6
Dislike slightly.....	4	4	7	8
Neither like nor dislike..	3	7	10	9
Like slightly.....	9	12	14	14
Like moderately.....	21	26	28	21
Like very much.....	42	25	17	14
Like extremely.....	12	10	3	3
Not specified.....	3	6	2	7
	=====			
	-----Number-----			
Respondents.....	193	285	197	304
Average.....	7.15	6.62	5.73	5.26

Background Information About the Households in the Sample

	User households	Nonuser households
<u>Characteristics</u>	<u>Percent</u>	
Homemaker's age:		
Under 35.....	25	34
35 to 44.....	25	26
45 to 54.....	25	20
55 and over.....	25	19
Not specified.....	-	1
Homemaker's highest school grade completed:		
8th or less.....	14	11
Some high school, 9-11.....	19	17
Completed high school.....	43	49
Some college.....	22	21
Not specified.....	2	2
Homemaker's employment status:		
Not employed.....	68	68
Full time.....	24	20
Part time.....	8	12
Number of people in household:		
1 or 2.....	32	27
3 or 4.....	38	38
5 or more.....	30	35
Total annual family income:		
Under \$6,000.....	38	30
\$6,000 to \$7,999.....	23	26
\$8,000 and over.....	38	44
Not specified.....	1	-
=====		
	<u>Number</u>	
Respondents.....	210	249

- Zero in this sample.

Sample Design and Sampling Method

The 459 persons interviewed in this survey were a sample of homemakers--the person with major responsibility for purchasing and preparing food for the members of the household--living in private households in the Standard Metropolitan Statistical Area (SMSA) of Pittsburgh, Pa. This city was chosen because it was located far enough away from a citrus growing area and its socioeconomic characteristics seemed to be about average.

Using 1960 Census statistics for Pittsburgh, 100 sampling units (blocks or groups of blocks) were randomly selected and a systematic sample of 611 dwelling units was designated. Of this number, 22 were vacant and 23 did not qualify; the remaining 566 comprised the eligible group of sample households. An original call and as many as three callbacks were made to complete interviews with homemakers who were not at home or were otherwise unavailable on the first visit to the household.

For each sampling unit, the interviewer was provided with a detailed map and instructions for listing the households included. Systematic random procedures were used to designate every "nth" household as one in which an interview was to be conducted. No deviations from the specified procedures and no substitutions were permitted.

The initial interview was completed with 459 homemakers (81 percent), but 34 homemakers refused to test the product. Placement was made in 210 grapefruit juice user households and 215 nonuser households. Among these two groups of homemakers, 12 had not tested the product when the interviewer returned for the first follow-up interview and 31 refused to test the second type of grapefruit juice crystals. When the interviewer returned to the homemaker for the second follow-up, eight had not tested the crystals. Cooperation in testing both the sweetened and unsweetened crystals was maintained with 374 households including 182 users of grapefruit juice and 192 nonusers.

Sampling Tolerances

As in all surveys where a sample is interviewed rather than the total population, the findings are subject to sampling errors. The following table of sampling tolerances is presented as a guide in evaluating the findings that involved the homemakers' responses. The chances are approximately 95 in 100 that the survey result does not vary, plus or minus, by more than the indicated number of percentage points from the result that would have been obtained had the same procedures been used in an effort to interview all homemakers in Pittsburgh.

Sampling Tolerances 1/

Item	Size of sample					
	50	100	200	300	400	500
For percentages around:	<u>Percent</u>					
10 or 90.....	9	7	5	4	4	3
20 or 80.....	11	10	7	6	5	4
30 or 70.....	13	11	8	6	6	5
40 or 60.....	14	12	8	7	6	5
50.....	14	12	9	7	6	5

1/ Two standard errors: 95-percent confidence level.

With the exception of check-box material, office record information and free-answer space, the questionnaires used for this study are reproduced below in entirety. Responses to a few of the questions have not been reported because the data were not of value. Instructions to interviewers are in upper case letters. The cards used are reproduced at the end of the questionnaires.

QUESTIONNAIRE FOR PLACEMENT INTERVIEW

Hello! My name is ----, I'm with Market Facts, Incorporated, a marketing research company. We are conducting a survey on food products for the U. S. Department of Agriculture and we'd like some of your opinions. (HAND RESPONDENT USDA LETTER -- CONDUCT INTERVIEW WITH HOMEMAKER.)

1. In the past six months what fresh fruit, if any, has been used in this household?

2a. (HAND CARD #1 TO RESPONDENT) Which of the following fruit juices, if any, have been used in this household in the past six months? (CIRCLE BELOW) 2b. In the past year are there any other of these fruit juices that have been used in this household? (CIRCLE BELOW)

(IF NO FRUIT JUICES USED IN PAST SIX MONTHS OR YEAR, OBTAIN CLASSIFICATION DATA, PAGE 6, THEN TERMINATE.) 3a. (ASK FOR JUICES MENTIONED IN BOTH QU. 2a AND QU. 2b) In which of these forms do you use each of these juices -- canned, frozen concentrate, chilled (bottled, carton, plastic), home prepared (fresh fruit squeezed)? Any other forms? (CIRCLE BELOW) 3b. (ASK IF MORE THAN ONE FORM MENTIONED FOR GRAPEFRUIT OR ORANGE IN QU. 3a) Which one form of grapefruit/orange juice do you use most often?

(ASK FOR ONE FORM OF GRAPEFRUIT JUICE GENERALLY USED) 3c. Why do you generally use (NAME FORM) grapefruit juice? (ASK FOR ONE FORM OF ORANGE JUICE GENERALLY USED) 3d. Why do you generally use (NAME FORM) orange juice?

(ASK IF GRAPEFRUIT JUICE NOT USED IN PAST SIX MONTHS OR PAST YEAR -- QU. 2a, 2b) 4. Why hasn't grapefruit juice been used in this household in the past year?

5a. (HAND CARD #2 TO RESPONDENT) In the past six months, which of the following fruit drinks, punches, ades, or mixes, if any, have been used in your household? Any others? (CIRCLE BELOW) 5b. In the past year, are there any other of these fruit drinks, punches, ades or mixes that have been used in this household? (CIRCLE BELOW) 5c. In which of these forms have you used each of these -- bottled, frozen concentrate, canned, powdered, or crystallized? (CIRCLE BELOW)

(ASK IF POWDERED OR CRYSTALLIZED FORM USED IN QU. 5c OR "OTHER" QU. 3a) 5d. Thinking in terms of powdered or crystallized forms that you mentioned, what advantages, if any, do you think they have over other forms of fruit drinks and juices? (PROBE) 5e. What disadvantages, if any, do you think the powdered or crystallized forms have over other forms of fruit drinks or juices? (PROBE)

(IF GRAPEFRUIT JUICE NOT USED IN PAST SIX MONTHS OR YEAR, QU. 2a, 2b, SKIP TO QU. 11a.) 6a. In general, why is grapefruit juice used in this household? 6b. On the average, how often has grapefruit juice been used in your household in the past year? (IF LESS THAN ONCE A MONTH, ABOUT ONCE A MONTH, OR EVERY 2 OR 3 WEEKS ASK QU. 6c, IF ABOUT ONCE A WEEK, SEVERAL TIMES A WEEK, OR ALMOST EVERY DAY SKIP TO QU. 7a.) 6c. Why isn't grapefruit juice used more often in your household?

7a. Into which of these age groups do the grapefruit juice users in this household fall? (HAND CARD #3 TO RESPONDENT -- CIRCLE BELOW) 7b. Which one of these age groups uses grapefruit juice most often? 7c. In general, when is grapefruit juice used by these age groups? (RECORD BELOW)

8a. Is sweetened or unsweetened grapefruit juice used? (IF "BOTH," ASK) 8b. Why do you use both?

9a. Now, thinking in terms of canned grapefruit juice, what do you think are the advantages, if any, of canned grapefruit juice? 9b. What are the disadvantages, if any, of canned grapefruit juice?

10a. Now, thinking in terms of frozen concentrate grapefruit juice, what do you think are the advantages, if any, of frozen concentrate grapefruit juice. 10b. What are the disadvantages, if any, of frozen concentrate grapefruit juice?

11a. Here is a description of a new form of grapefruit juice, please read it carefully. (HAND RESPONDENT CARD #4 AND READ: "Grapefruit juice crystals are made from real grapefruit. They are made by a new process which dries the grapefruit and leaves it in a crystallized form. These crystals are like powder and can be turned into grapefruit juice just by adding water." -- ALLOW RESPONDENT ENOUGH TIME TO READ THE CARD, THEN ASK.) How likely would you be to try this kind of product? (HAND CARD #5 TO RESPONDENT)

11b. In your opinion, what would be the advantages, if any, of grapefruit juice crystals? (PROBE)

11c. What, if any, would be the disadvantages of grapefruit juice crystals? (PROBE)

11d. Thinking in terms of such things as the nutritional value or vitamin content, do you think the grapefruit juice crystals would be better, just as good, or not as good as regular grapefruit?

12a. How many people are there living in this household?

12b. (HAND CARD #3) Please tell me into which age group you fall. (RECORD BELOW) Now, for each of the other members of your household, tell me their relationship to you and into which of the age groups each one falls. (Please indicate sex.)

13a. What was the last grade of school you completed? 13b. Are you employed? (IF "YES",) Full-time or part-time?

14. (HAND CARD #6 TO RESPONDENT) Which of these categories best describes your total family income from all sources last year? Please include all income for all employed family members.

15. As part of this study, we would like you and all of your household members 12 years old and over to try the new grapefruit juice crystals. The product has been developed by the U. S. Department of Agriculture and the Florida Citrus Commission. I'd like to leave you some packages of the grapefruit juice crystals to use in the next few days. (EXPLAIN INSTRUCTION SHEET TO RESPONDENT AND COMPLETE QUESTIONS BELOW.) Grapefruit juice users, Nonusers; Product placed: Plain, Green stripe; Number in household; Number of packages placed; Number of Household Members' Rating Forms; Color of Household Members' Rating Forms: Green, Blue.

(IF RESPONDENT UNWILLING TO TAKE PART IN TEST RECORD REASONS FOR NON-PARTICIPATION)

FIRST AND SECOND FOLLOW-UP INTERVIEW

(OBTAIN THE HOUSEHOLD MEMBER RATING FORMS FOR ALL OF THE HOUSEHOLD MEMBERS TAKING PART IN THE STUDY AND BE SURE THAT EACH ONE HAS BEEN COMPLETELY FILLED OUT -- IF NOT, RECORD REASON ON BACK OF RATING FORM. ALLOW THE HOMEMAKER TO AMEND HER OWN FORM IN TERMS OF COMPLETENESS BUT NOT IN TERMS OF THE COMMENTS MADE.)

1a. Now that you've tried this product, what are the advantages of the grapefruit juice crystals, if any? (PROBE) 1b. What are the disadvantages of the grapefruit juice crystals? (PROBE) 1c. In your opinion how could this product be improved? (PROBE)

(ASK QU. 2 IF GRAPEFRUIT JUICE USER -- IF NON-USER SKIP TO QU. 3)

2a. Now I'd like you to compare the grapefruit juice you usually use with the grapefruit juice crystals on a number of characteristics. For each characteristic I mention please tell me whether you prefer the grapefruit juice you usually use or the grapefruit juice crystals. (RECORD BELOW) Taste (flavor), Ease of preparation, Texture (consistency), Color. 2b. (ASK IF CHOICE MADE IN QU. 2a) Do you prefer it a lot or just a little? (REPEAT FOR EACH CHARACTERISTIC LISTED)

3a. How were the water and grapefruit juice crystals mixed? 3b. Was the water added to the grapefruit juice crystals or the crystals added to the water? 3c. How was the water measured? 3d. How much water was used -- more, less, or the amount recommended on the package?

4a. Would you say that the grapefruit juice crystals mixed easily or that they were not easy to mix up? (IF HARD TO MIX ASK QU. 4b) 4b. Why do you say that the product was hard to mix?

5a. As far as preparing this product is concerned, were the instructions on the package easy to follow or were there some problems with them? (IF PROBLEMS ASK QU. 5b) 5b. How would you improve the instructions on the package?

6a. When you and your family rated the juice prepared from the crystals, was the juice served cold or at room temperature? 6b. How soon after preparation was this juice served and rated? 7a. Was the grapefruit juice made from the crystals served only at the time it was rated or did you serve it again?

7b. When was the grapefruit juice used?

8. If any children under 12 happened to try the grapefruit juice crystals, how would you describe their reaction?

9a. Have you used all of the grapefruit juice crystals or not? (IF NOT USED ASK QU. 9b) 9b. Why not?

SECOND FOLLOW-UP INTERVIEW ONLY

10a. Now that you've tried both grapefruit juice crystal products, which one did you prefer, the one used first or the one you used next? (IF PREFERENCE INDICATED, ASK QU. 10b) 10b. Why do you prefer that one?

11a. (HAND CARD #7 TO RESPONDENT) Using this rating scale, please tell me how likely you would be to buy the grapefruit juice crystals (of your choice) if they were available in local stores?

11b. How much would you expect to pay for one box containing two packages of the same size as the samples that you tried of the grapefruit juice crystals (of your choice)?

11c. (HAND CARD #8 TO RESPONDENT) Let us assume that grapefruit juice in general costs 32¢ per quart. Would you look at the card, please, and tell me what is the highest price at which you would buy a package of grapefruit juice crystals which would mix into a quart?

12. (ASK ONLY IF GRAPEFRUIT JUICE USER) Suppose these grapefruit juice crystals (of your choice) cost approximately the same price per serving as the grapefruit juice you now use, what proportion, if any, of the grapefruit juice now used would you buy in the crystal form?

13a. Overall, what if anything, did you like about the packaging of this product? 13b. Overall, what if anything, did you dislike about the packaging? 13c. How, if at all, would you change the packaging of the grapefruit juice crystals? 13d. These grapefruit juice crystals could be packaged in a variety of sizes. Which of these packaging sizes would you be most interested in -- the present size of package which mixes with 16 ounces of water, a larger package or smaller individual serving sized packages?

14. How would you use the grapefruit juice crystals?

Card #1

FRUIT JUICES

Grapefruit
Orange
Orange-Grapefruit
Pineapple-Grapefruit
Pineapple-Orange
Tangerine

Card #2

FRUIT DRINKS, PUNCHES ADES (INCLUDING MIXES)

Grapefruit	Lemonade
Orange	Lemon-Lime
Pineapple-Grapefruit	Limeade
Orange-Lemon	Pineapple-Orange
Apricot-Orange	Raspberry-Lemon

Card #3

UNDER 12
12 - 24
25 - 34
35 - 44
45 - 54
55 & OVER

Card #4

GRAPEFRUIT JUICE CRYSTALS

Grapefruit juice crystals are made from real grapefruit. They are made by a new process which dries the grapefruit and leaves it in a crystallized form. These crystals are like powder and can be turned into grapefruit juice just by adding water.

Card #5

Definitely try
Probably try
Might or might not try
Probably not try
Definitely not try

Card #6

A. UNDER \$4,000	D. \$8,000 to \$9,999
B. \$4,000 to \$5,999	E. \$10,000 to \$14,999
C. \$6,000 to \$7,999	F. \$15,000 & OVER

Card #7

Definitely buy
Probably buy
Might or might not buy
Probably not buy
Definitely not buy

Card #8

4¢ a quart more than grapefruit juice
3¢ a quart more than grapefruit juice
2¢ a quart more than grapefruit juice
The same price as grapefruit juice
2¢ a quart less than grapefruit juice
3¢ a quart less than grapefruit juice
4¢ a quart less than grapefruit juice

HOUSEHOLD MEMBER RATING FORM

This questionnaire is for (YOUR NAME) _____

PLEASE CHECK THE APPROPRIATE BOXES

Your Age: 12-18, 19-24, 25-34, 35-44, 45-54, 55 & over

Sex: Male
Female

Household Member: Wife, Husband, Son, Daughter, Other Member

=====

PLEASE ANSWER RIGHT AFTER YOUR FIRST SERVING OF THIS PRODUCT

1. Now that you've tried the grapefruit juice crystals, please tell us how much you like or dislike them by checking the statement below which best describes your opinion about this product: Dislike extremely, Dislike very much, Dislike moderately, Dislike slightly, Neither like nor dislike, Like slightly, Like moderately, Like very much, Like extremely.
2. What, if anything, did you particularly like about the grapefruit juice crystals? Nothing
3. What, if anything, did you particularly dislike about the grapefruit juice crystals? Nothing
4. You have already told us your opinion about the grapefruit juice crystals. Now we would like you to think about grapefruit juice in general. Please tell us how much you like or dislike grapefruit juice by checking the statement below which best describes your opinion about grapefruit juice in general: Dislike extremely, Dislike very much, Dislike moderately, Dislike slightly, Neither like nor dislike, Like slightly, Like moderately, Like very much, Like extremely.